

Raven *Corvus coronoides*



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The Australian Raven *Corvus coronoides* is a damage causing species in both rural and urban areas. At times, individual properties can suffer severe damage and roosting birds can cause damage in urban areas.

Some people believe ravens are beneficial for insect control and cleaning up carrion and waste grain, but others believe the damage they cause outweighs the benefits.

Identification

The Australian Raven is 48 to 54 cm in length and 500 to 820 g in weight (Morcombe 2000). It is a large black bird with a long bill and elongated throat feathers (hackles) that are obvious when it calls (Morcombe 2000). The call is a drawn-out, falling 'aah-aah-aaaaahhhh' (Morcombe 2000). The eyes change from blue (as a nestling) to brown and finally white (at three years of age) as they mature (Rowley 1970). Birds in their first year may appear duller in colour than adults (Morcombe 2000). The juvenile birds also have shorter hackles and pink skin around and within the mouth (Morcombe 2000).

Distribution and abundance

The Australian Raven occurs throughout southern Australia, excluding Tasmania (Higgins and Peters 2006). In Western Australia, the Australian Raven occurs in the south-west, from the mouth of the Murchison River to Eucla and inland to the southern fringe of the Nullarbor Plain (Higgins and Peters

2006). It has become one of the most common birds in the city and suburbs of Perth.

Biology

Australian Ravens frequent open pastures and developed areas and rarely forage in heavily wooded areas (Higgins and Peters 2006). Breeding birds inhabit a territory with a nest/roost tree, a water supply and a reliable source of food (Higgins and Peters 2006).

Australian Ravens do not breed until they are at least three years of age (Rowley 1973b) and pairs may remain together until one dies (Rowley 1973c). They build a stick nest in the tallest tree in the area and lay 1 to 6 eggs in late winter and early spring (Rowley 1973c). The female incubates the eggs for 19 to 21 days and broods the young (Rowley 1973c). Nestlings remain in the nest for at least six weeks (Rowley 1973c). After fledging, the young are fed by both parents for a period of up to four months (Rowley 1973c). Studies in rural areas show

that breeding birds produce two nestlings every year and live for 7 to 8 years (Rowley 1973c).

A study conducted in Perth found that over 70% of the diet of the Australian Raven was made up of meat, insects, fruit and bread (Stewart 1997). These foods are available in parks, shopping centres, schools and near take-away food outlets.

Studies in rural areas have shown that Australian Ravens depend on carrion such as dead livestock and road kills (Rowley 1973d). Other food items include Oats *Avena sativa*, Wheat *Triticum aestivum*, birds' eggs and nectar (Rowley 1973d).

Habits

Flocks of Australian Ravens rarely exceed 30 birds and consist of non-breeding and immature Australian Ravens that wander locally or move further a field in search of food. Breeding pairs are sedentary and usually remain within their territories (Rowley 1973a). However, when food becomes abundant outside their territory birds may flock to that area (Rowley 1973a). For example, the ravens respond to events such as lambing, grasshopper swarms, grain stubble exposure and disposal of rubbish and abattoir waste (Rowley 1973a). The diet of ravens varies on a seasonal basis corresponding with changes on the availability of food (Rowley 1973d).

Australian Raven populations increase in number if the birds have access to food, water, roosting sites and breeding sites (Rowley 1973a). Ravens have increased in number in the Perth metropolitan area as a result of an increase in the amount of food and water available, mostly via poorly secured rubbish, irrigation of lawns and gardens and deliberate feeding of the ravens. Another factor affecting raven numbers in the metropolitan area is the availability of roosting and nesting sites. Ravens prefer to nest 10 to 25 metres above ground and are therefore more

likely to be more abundant in older, well-established suburbs (Stewart 1997). The young of resident populations remain with their parents for 3 to 4 months (Rowley 1973c), during which time they can cause a nuisance and damage to property. The mortality rate of young ravens is quite high at around 54 to 65% (Rowley 1971). Surviving juveniles join a passing flock and become nomadic (Rowley 1973c).

Ravens are known for their behaviour of 'swarming' food sources, fighting over food and flocking to harass predators (Rowley 1973a; 1973d). The two most common predators of ravens in rural areas are humans and Wedge-tailed Eagles (Rowley 1973c).

Damage

Although Australian Ravens cause a range of damage problems, on many occasions, the damage is more commonly associated with other animal species (Johnson 1994). For example, ravens may consume nuts and grapes (Temby 2003a), but similar damage may be caused by other birds and rodents. Ravens can also consume the eggs and young of domestic – and water – fowl but this damage is unlikely to impact on the population (Temby 2003a) and is often contributed to by foxes. Because the damage may be caused by other animals, it is important to determine if ravens are responsible before taking action.

A survey of Perth residents found that the main problem associated with Australian Ravens in the city and suburbs was the noise they make (Stewart 1997). The ravens also attack other birds, break open and scavenge in rubbish bins and damage gardens and fixtures on windows and cars (Stewart 1997). They may also represent a health risk by contaminating items with their droppings, scavenging in eating areas and drinking from water fountains (Stewart 1997).

In rural areas Australian Ravens are known to damage grape, almond, melon and citrus crops (Stewart 1997). Studies show that Australian Ravens are inefficient predators and prefer carrion, such as dead lambs and after-birth (Rowley 1973d). They sometimes kill live lambs and other young animals. However, few healthy lambs are killed by ravens and most of the lambs they eat are sick or have already died (Rowley 1969). Most lambs die because they are weakened and starving because they have been weaned, but have failed to become established (Rowley 1969; Temby 2003b).

While ravens can cause substantial loss of livestock, this is rare, and detailed studies have shown that predation is not the principal cause of lamb deaths in Australia each year (Rowley 1969). Ravens are often abundant at lambing time because afterbirths and carrion provide an abundant food source (Rowley 1969). Correct nutrition of ewes and provision of adequate shelter and supervision near lambing time can reduce the number of weak lambs and the number that are vulnerable to predators (Rowley 1969; Temby 2003b).

Nuisance

The presence of nomadic groups of ravens leads to complaints from the public relating to noise, scavenging in rubbish bins and damage to fixtures on buildings and cars.

Fouling

The presence of large numbers of ravens can result in fouling of buildings and vehicles with faeces.

Health

Ravens carry *Salmonella* spp. and thus there is a risk of transmitting diseases and infections, such as Salmonella, to humans from contact with faeces.

Biodiversity

Ravens prey on the eggs and young of other native birds and crowd other birds at breeding sites. For example, Australian Ravens attack and kill the threatened Western Swamp Tortoises *Pseudemydura umbrina* that leave the water when swamps dry out (Burbidge and Kuchling 2004).

Primary production

Some damage to fruit, grain and nut crops can be attributed to ravens and they also take fruit from backyard orchards. Ravens will kill weak or ill fowl and livestock.

Environmental Law

Commonwealth

None.

State

The Australian Raven is listed as a Declared Pest of Agriculture (Category A7 of the *Agriculture and Related Resources Protection Act 1976*, administered by the Western Australian Department of Agriculture and Food) in the **Eucla and south-west land divisions**, excluding the Perth Metropolitan area. Category A7 means that a management programme outlines the area and conditions under which controls may be applied (*List of Declared Animals, 18 November 2005*) pursuant to the *Agriculture and Related Resources Protection Act 1976*.

As a native species, the Australian Raven is protected under provisions of the *Wildlife Conservation Act 1950*, administered by the Department of Environment and Conservation (DEC). Under this Act, Australian Ravens can be shot on private land in accordance with an open season notice without the need to obtain a damage licence from DEC if they are causing damage to, or likely to cause damage to, crops or stock. The area

covered by the notice comprises the **Eucla and south-west land divisions**, excluding the Perth metropolitan area and the municipal districts of Bunbury and Mandurah. Outside the open season area, a damage licence from DEC is required prior to shooting or trapping.

Damage Prevention and Control

Damage prevention and control strategies for the Australian Raven can vary markedly between metropolitan and rural areas. The goal of damage prevention and control in the both areas is to remove the resources that attract ravens. Control of ravens mostly affects the nomadic members of the population and because resident breeding pairs remain, reproduction quickly renews numbers (Rowley 1971). Most control programs offer only a temporary solution due to annual recruitment rates and the mobile non-breeding component of the population (Rowley 1971).

Metropolitan area

In metropolitan areas, the following steps are likely to be effective:

- don't feed wild native animals or birds, or allow excess food to accumulate;
- clear away food scraps and excess pet food;
- dispose of fruit which has fallen from fruit trees;
- cover compost heaps, or use a compost bin;
- properly secure chicken pens and ensure they are in good repair;
- deny Australian Ravens access to sheds, vehicles and rubbish bins; and
- thin or prune tree branches to make the area unattractive, causing the ravens to move to an alternative site.

Spraying ravens with water through a sprinkler or hose as they land can deter the birds from damaging buildings and cars (Johnson 1994). Hanging

reflective tape in roost trees may also scare ravens in urban areas (Johnson 1994). A combination of techniques is likely to be more effective than a single technique and the type, intensity and location should be varied to ensure that the ravens do not get used to them (Johnson 1994).

Bins with lids deny ravens access to food and should be used throughout the city where they are likely to be a problem. This includes restaurants, fast food outlets, recreation areas, schools, shopping centres, factories and food processing plants. It is important to ensure that a sufficient number of bins are available and that bins are emptied regularly to ensure that they do not become over-filled. This is particularly important in schools and recreation areas during peak holiday periods.

Rural areas

A strategy comprising a number of techniques will probably be needed to reduce damage caused by the Australian Raven in rural areas.

Exclusion

Exclusion is generally not practical for problems caused by ravens but may be of use in some circumstances (Johnson 1994). For example, temporary or permanent netting may be useful to enclose high-value crops in small areas (Johnson 1994).

Habitat Modification

Place an alternative food source away from crops and stock. Continue shooting and scaring near the crop and stock so the birds move to an area where they will not be disturbed while feeding on the decoy feed.

Behaviour Modification

Timing of lambing to coincide with that of your neighbours can ensure that flocks of ravens are not attracted to the one area. Small well-sheltered

lambing paddocks near the homestead allow ewes to be present to defend and feed lambs. The lambs are then kept warm and farm activities scare the ravens. Limit spilt grain and use bird proof-bins.

Scaring

Noise emitting devices, such as recorded raven distress calls, can be effective in dispersing flocks of ravens in the short term (Rowley 1969). Other devices include gas guns, alarms, explosive cartridges, lights, bright objects and other noise emitting devices (Johnson 1994). However, the ravens quickly learn that there is no threat associated with the sound and it becomes ineffective in the long term (Rowley 1969).

Shooting

Shooting is more effective as a dispersal technique than a population reduction measure (Johnson 1994). Shooting of ravens is difficult and time consuming (Rowley 1969) and the number of birds removed usually represents only a small proportion of the birds causing damage. In addition, a member of a breeding pair can be replaced very quickly (sometimes within hours), and thus may only be effective for removing particularly damaging individuals (Rowley 1969).

However, shooting may be useful for small groups of problem birds (Johnson 1994). Firearms must be licenced and shooting must be conducted under the conditions of the licence the national guidelines for [Shooting of Pest Birds](#) (Sharp and Saunders 2004a).

Ravens may be shoot with a 12 gauge shotgun, with 3's to 5's shot size. The optimum range for shooting is 30m and the effective range is 40m (Sharp and Saunders 2004a).

Population control

Removal of nests and eggs in ravens is unlikely to be successful because replacement clutches can be

laid within five weeks (Rowley 1973b). Trapping is time consuming, requires maintenance and may offer only a temporary solution, due a reservoir of 'replacement' birds in the population (Rowley 1973a; Johnson 1994). It can however, be a successful method of population control at sites where a small resident group is causing damage or where other control methods are not appropriate (Johnson 1994).

A commonly used trap is the Australian Crow Trap (Figure 1), which is a type of decoy trap. This trap is a large permanent or moveable timber framed trap covered in small poultry wire mesh. A letterbox or ladder arrangement on the top of the trap (Figure 1) allows the ravens to drop into the trap and feed, but they are unable to fly out. The two outer spaces in the ladder must also be covered in mesh to prevent the ravens from escaping. Minimum size for the trap is a depth of 2m, width of 2m and length of 3m, with a door installed to facilitate daily inspection. These traps are most successful when used during winter when food is scarce (Johnson 1994).

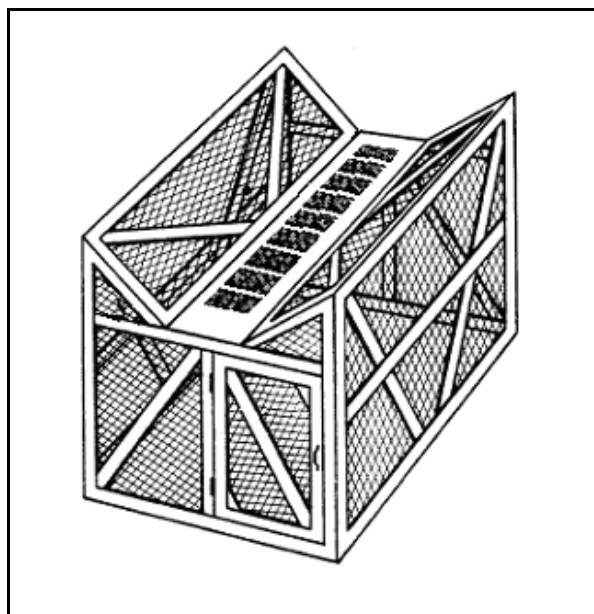


Figure 1 Australian crow trap end view showing 'ladder' arrangement at the top (diagram modified from Hygnstrom *et al.* (1994)).



Figure 2 Australian Crow Trap in use at a landfill site New Jersey, USA (image from www.rci.rutgers.edu/~lreed/crowtrap.htm).

Trapping of ravens must be conducted under the conditions of a licence from DEC and the procedures used must follow the national guidelines for Trapping of Pest Birds (Sharp and Saunders 2004b).

The most effective bait is likely to be the food that the ravens are already feeding on. This may include meat (off-cuts, small animal carcasses), eggs, corn on the cob, fruit and vegetables (Johnson 1994). Poultry feed may be effective and may be preferred where carnivores such as foxes and feral cats are attracted to the trap (Johnson 1994). The bait is placed under the ladder portion of the trap and water must also be provided (Johnson 1994). After the first baiting, the trap should not be visited for 24 hours, but once the birds begin to enter the trap, it must be checked and maintained daily (Johnson 1994). The bait must be replaced as soon as it loses its fresh appearance. Ravens should be

removed from the trap after sunset when they are calm, to facilitate handling (Johnson 1994). About five birds should be left in the trap as decoys (Johnson 1994).

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